Claims: 202ku06.WO

1. A process for reducing the content of NO_x and N_2O in gases, in particular in process gases and offgases, which comprises the measures:

   a) passing the N_2O- and NO_x-containing gas over a sequence of two catalyst beds comprising one or more iron-laden zeolites,
   b) adding a reducing agent for NO_x between the catalyst beds,
   c) setting a temperature of less than 500°C in the first catalyst bed and second catalyst bed,
   d) setting a gas pressure of at least 2 bar in the two catalyst beds,
   e) selecting a space velocity in the first and second catalyst beds such that a reduction in the N_2O content of the gas by not more than 90%, based on the N_2O content at the entrance to the first catalyst bed, occurs in the first catalyst bed and an N_2O content of greater than 200 ppm is established and that a further reduction in the N_2O content of the gas by at least 30%, based on the N_2O content at the entrance to the second catalyst bed, occurs in the second catalyst bed.

2. The process as claimed in claim 1, characterized in that the same catalyst is used in the first and second catalyst beds.

3. The process as claimed in claim 1, characterized in that the iron-laden zeolite or zeolites is/are of the MFI, BEA, FER, MOR, FAU and/or MEL type.

4. The process as claimed in claim 3, characterized in that the iron-laden zeolite is of the MFI type.

5. The process as claimed in claim 1, characterized in that the zeolite is an Fe-ZSM-5.

6. The process as claimed in claim 1, characterized in that the process is carried out at a pressure in the range from 4 to 25 bar.

7. The process as claimed in claim 1, characterized in that ammonia is used as reducing agent for NO_x and is employed in an amount of from 1.0 to 1.2 mol per mol of NO_x to be removed.

8. The process as claimed in claim 1, characterized in that the NO_x- and N_2O-containing gas is passed over each of the catalyst beds at a space velocity of from 5,000 to 50,000 h^{-1}, based on the total catalyst volume of the two catalyst beds.

9. The process as claimed in claim 1, characterized in that the temperature in the first and second reaction zones is from 350 to 450°C.

10. The process as claimed in claim 1, characterized in that iron-laden zeolites which have been treated with water vapor are used in at least one catalyst bed.

11. The process as claimed in claim 1, characterized in that iron-laden zeolites in which the ratio of extralattice aluminum to lattice aluminum is at least 0.5 are used as catalysts in at least one catalyst bed.

12. The process as claimed in claim 1, characterized in that it is integrated into the process for nitric acid production.

13. The process as claimed in claim 1, characterized in that it is integrated into the process of operation of a gas turbine.

14. The process as claimed in claim 1, characterized in that it is integrated into the process of operation of a power station.

15. An apparatus for reducing the content of NO_x and N_2O in gases, in particular in process gases and offgases, which comprises:

A) two catalyst beds which are connected in series and each comprise one or more iron-laden zeolites and through which the NO_x- and N_2O-containing gas flows,
B) a device for introducing a gaseous reducing agent into the stream of the NO_x- and N_2O-containing gas located between the catalyst beds, which comprises a mixer through which the gas which has flowed through the first catalyst bed is passed and a feed line for reducing agent which opens into the space downstream of the first catalyst bed and before or into the mixer, with the gas to be purified being passed through the second catalyst bed after leaving the mixer, wherein
C) at least one of the catalyst beds is configured as a hollow cylinder through which the NO_x- and N_2O-containing gas flows radially.

16. The apparatus as claimed in claim 15, characterized in that both catalyst beds are arranged in one container.

17. The apparatus as claimed in claim 15, characterized in that the NO_x- and N_2O-containing gas flows radially through both catalyst beds.

18. The apparatus as claimed in claim 15, characterized in that two catalyst beds through which the gas flows radially are arranged above one another or in that a combination of catalyst beds through which the gas flows axially and radially and which are arranged above one another is present, with the path of the gas being prescribed by suitably arranged separators between the catalyst beds so that the gas flows firstly through the first catalyst bed and then through the second catalyst bed.

19. The apparatus as claimed in claim 15, characterized in that two catalyst beds through which the gas flows radially and which have different dimensions are present, with the external dimension of one catalyst bed being smaller than the internal dimension of the other catalyst bed and both catalyst beds being arranged concentrically, and with the path of the gas being prescribed by suitably arranged separators between the catalyst beds so that the gas flows firstly through the first catalyst bed and then through the second catalyst bed.

20. The apparatus as claimed in claim 15, characterized in that the gas which has passed through the first catalyst bed is passed into a mixer located in the center of the apparatus.

21. The apparatus as claimed in claim 15, characterized in that the mixer is configured as a static mixer or as a dynamic mixer, preferably in the form of a tube through which the gas flows.